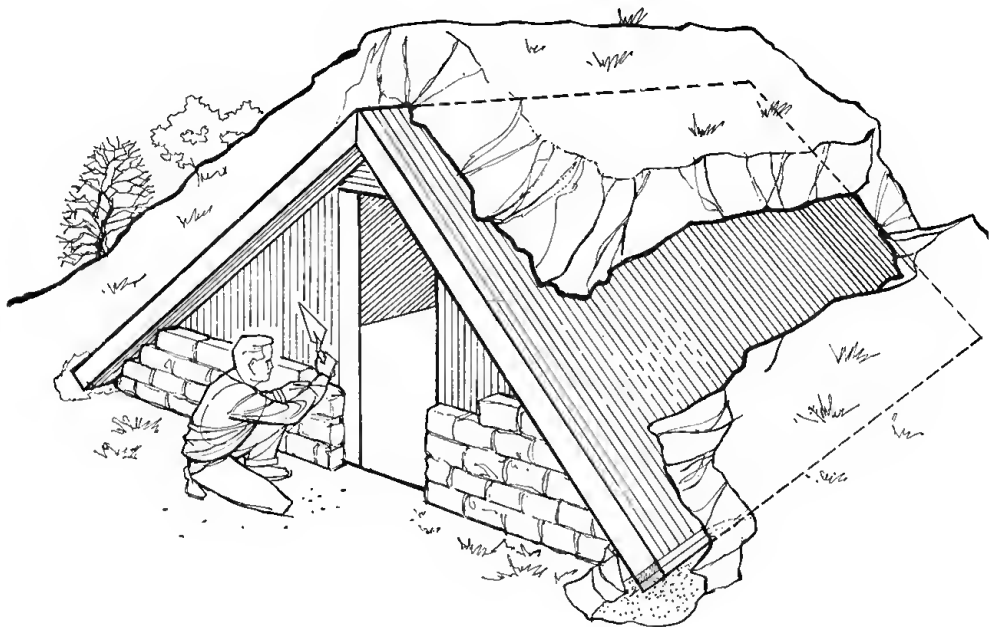




Aboveground Earth-Covered Lumber A-Frame Shelter



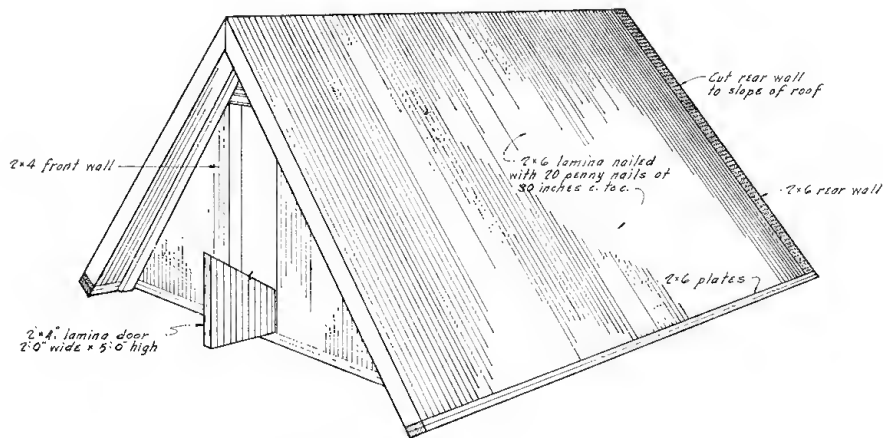
GENERAL INFORMATION

The purpose of this shelter is to provide protection for 10 persons from the effects of radioactive fallout at a location near but separate from a residence or other nearby buildings. The principal advantage of this shelter is that it can be erected without excavation in locations where there is poor drainage or where the ground water table is close to the surface. However, this shelter is not a low-cost structure. Footings or thrust ties are

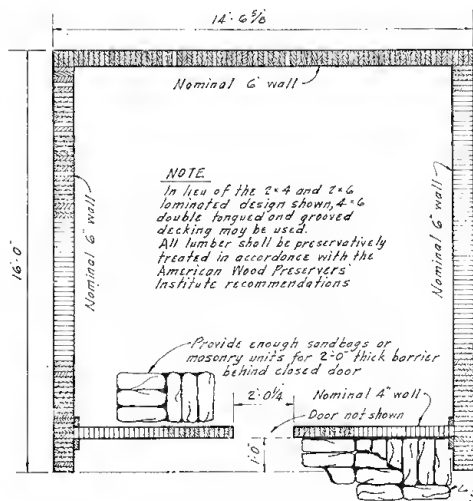
needed where the earth is soft or of poor bearing capacity.

TECHNICAL SUMMARY

Space and Occupancy.—This shelter provides almost 150 square feet of area and approximately 640 cubic feet of space. Although only a small portion of this area provides sufficient headroom for standing erect, practically the entire area can serve as sitdown space for 10 persons and storage space for supplies.



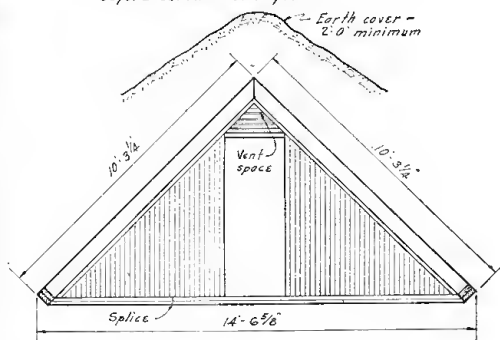
PERSPECTIVE VIEW



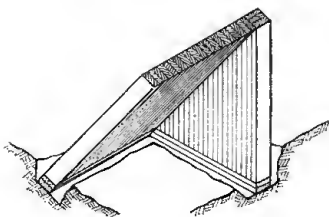
FLOOR PLAN

NOTE

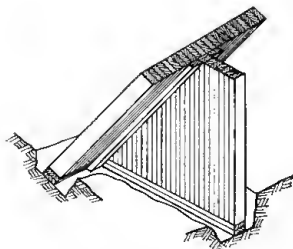
A water repellent film shall be applied before earth cover is placed



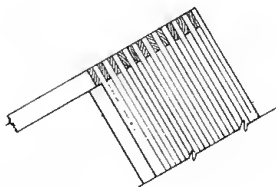
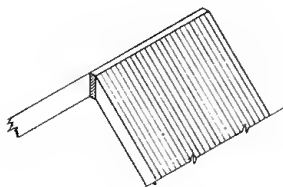
FRONT ELEVATION



Rear Wall



Front Wall



Alternate Ridge Details

CONSTRUCTION DETAILS

Availability and Cost of Materials.—The pressure-treated lumber which is required is generally available at retail lumberyards. In certain areas it may be necessary to allow time for the treated lumber to be ordered and transported from stock at other locations. The estimated cost of materials is \$550.

Fallout Protection Factor.—The recommended minimum earth cover of 2 feet with an entrance-way and door shielded by a 2-foot thickness of sandbags, and the rear wall mounded will provide a protection factor of about 500.

Blast Protection.—While the basic function of this shelter is fallout protection, limited blast resistance of about 5 pounds per square inch of

overpressure would be afforded by the heavy wood structure. The blast resistance would vary somewhat with the workmanship and materials but the laminated design tends to offset variations.

Ventilation.—Ducts for mechanical ventilation may be located in the ventspace over the doorway without involving structural change. Hand-operated ventilation equipment should be used.

Construction Time.—After materials are delivered at the jobsite, 4 man-days should be allowed for erecting the structure. Earth covering would require 4 additional man-days, without the use of power equipment.

Structural Life Expectancy.—The life expectancy of this shelter should be from 15 to 20 years.

CONSTRUCTION SEQUENCE

1. Assemble the materials at the shelter site.
2. Trench to subsoil for the wallplates as shown on the floor plan and details. Assemble plates in the trenches. (See construction details, rear-front walls.)
3. Begin at either end and erect roof wall members in pairs. (See alternate ridge details.) Progress to the opposite end, spiking laminations together. If 2" x 6" lamina are used, they should be nailed with twentypenny nails at approximately 30-inch spacing. If 4" x 6" decking lamina are used, they should be fastened together with 5/16-inch diameter spikes at approximately 30-inch spacing.
4. Erect the end walls as shown on the drawings with ends of the lamina cut flush with the roof wall top surface. The lamina should be spiked together in the same manner as the roof members.
5. The supporting structure is now complete. It should be covered with the polyethylene film

and covered with earth. The earth cover should be started at the base of the roof walls and applied evenly to both sides. Next mound earth against the rear wall. The sandbags or masonry blocks are applied on both sides of the front wall to a thickness of 2 feet. A supply of filled sandbags or blocks should be stored inside the shelter to add to the protection afforded by the door.

6. Vegetation, riprap, or other means of holding the soil in place should be provided.
7. A duct for air intake will be required with the installation of the hand-operated blower. The intake duct may be located in the rear wall of the shelter and the air can be exhausted through the louvered ventspace over the doorway.
8. The door may be of heat- or blast-resistant construction, as manufactured commercially, or may be contrived by nailing 2" x 4" studs together to make a 4-inch-thick door. This then can be mounted with ordinary hinges and should be painted white.

BILL OF MATERIALS

<i>Item</i>	<i>Quantity</i>
Roof walls 2" x 6" x 10'-----	250 pieces.
Rear wall 2" x 6" x 8'-----	50 pieces.
Front wall 2" x 4" x 8'-----	40 pieces.
Plates:	
2" x 6" x 10'-----	10 pieces.
2" x 4" x 10'-----	3 pieces.
Fastenings:	
Fortypenny nails-----	10 pounds.
Twentypenny nails-----	30 pounds.
Water repellent—building felt or plastic film-----	150 square feet.
Bagged earth or masonry blocks for front wall shielding.	600 filled sandbags (30 pounds) or 176 concrete blocks (8" x 12" x 16").
Blower, manually operated (rated at 30 cubic feet per minute).	1.
Intake pipe, galvanized (to be mounted through rear wall).	6 feet.
Flyscreen 7" x 7" (for intake pipe)-----	1.
Flyscreen 24" x 24" (to cover ventspace over door)-----	1.